

# Networks vs. market methods in high-tech venture fundraising: the impact of institutional environment

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This study examines how institutional environmental factors, including cultural norm, state regulatory system and venture capital market, influence the high-tech entrepreneur's choice for using network vs. market methods when approaching prospective investors at the early stage of their new venture creation. We collected comparative data through on-site interviews and questionnaire survey with 128 high-tech entrepreneurs in Singapore (a newly industrialised economy) and 250 in Beijing, China (an emerging economy). Our findings suggest that a culture emphasising the value of social obligation, the under-development of the legal/regulatory system and the immaturity of the venture capital market increased the proclivity of entrepreneurs to use network methods. Moreover, entrepreneurs who value networks higher in social obligation than in information transfer are more likely to choose personal ties instead of business ties. This study enhances our understanding of how high-tech entrepreneurs in emerging economies choose between networks and market methods in venture fundraising, and offers suggestions on how public policy makers in these economies can improve the institutional environment of their regions to promote high-tech new venture creation.

*Keywords:* entrepreneurial finance; venture capital; social network; network utilisation; Singapore; China.

## 1. Introduction

In the past 20 years, scholars of entrepreneurship have increasingly recognised the importance of social embeddedness in high-tech new venture creation and growth (Birley 1985, Aldrich and Zimmer 1986, Granovetter 1985, Greve and Salaff 2003). Their research has identified market failure stemming from high uncertainty and information asymmetry between high-tech entrepreneurs and prospective investors in risk-capital markets, and has highlighted the benefits of entrepreneurs' network ties in securing investment from early stage investors (see Starr and MacMillan 1990, Batjargal and Liu 2004). Compared with strangers, the prospective investors with whom the entrepreneurs have prior relationships (that is, *direct ties*) or to whom they are referred (that is via *indirect ties*) seem more likely to make the financial commitment. Theoretically, scholars believe that social network methods are a solution to market failure in risk-capital markets (Shane and Cable 2002, Shane and Stuart 2002).

However, entrepreneurs very often have to face various constraints in using existing network ties. The literature has identified a few critical elements, including

the lack of strong and relevant ties and the high costs of using ties due to the expectation of reciprocity in the future (Portes 1998, Gabbary and Leenders 1999, Leana and Van Buren 1999, Lin 1999). As a result, entrepreneurs often have to consider the use of 'market methods' to approach prospective investors whom they neither know directly nor indirectly (via referrers).

An interesting question thus arises: what are the factors that influence an entrepreneur's decision to use social network vs. market methods to approach investors to secure investment? This network utilisation decision is strategically important, because it determines the amount, quality, speed and cost of obtaining funding and, eventually, the likelihood of survival and growth of the new venture. However, few entrepreneurship studies have examined this question, and almost all of the existing studies concentrated on factors endogenous to the ventures or the entrepreneurs themselves (Larson and Starr 1993, Ostgaard and Birley 1994, Hite and Hesterly 2001, Zhang *et al.* 2008). We still do not have sufficient knowledge on the influence of external environmental factors. Since venture fundraising is a context-dependent process (Reynolds 1991, Low and Abrahamson 1997), which requires 'fit' between fundraising strategy and the environmental conditions (Venkatraman 1989), it is imperative to examine the impacts of environmental factors on entrepreneurs behaviour.

To fill this research gap, this study examines the impacts of institutional environmental factors, including cultural norm, legal/regulatory framework and venture-capital market, on high-tech entrepreneurs' choice of network vs. market methods in seeking early-stage funding. Essentially, we argue that besides market failure, factors pertaining to institutional failure (Mercuro and Medema 1997), such as poor regulatory policies affecting the development of venture-capital market, may force high-tech entrepreneurs to use network methods instead of market methods. To highlight the role of institutional factors, this study adopts a comparative analysis approach based on two different Asian economic contexts – a newly industrialised economy (Singapore) and an emerging economy (China). The choice of Asian economies provides useful contrast to prior studies based on western countries (see Drakopoulou Dodd and Para 2002). In addition, although it is well-known that personal relationship (*guanxi*) has played a critical role in the social and economic activities of China up to the early 1990s (Yang 1994), little empirical evidence has been reported in more recent years on Chinese network utilisation behaviour under the influence of increasing capitalist market developments, particularly with respect to new venture fundraising activities. Our study findings would thus provide useful and timely policy implications for public policy makers in contemporary China, as well as in other transitional economies.

This paper is structured as follows. In section 2, we review the literature on network-based research on entrepreneurial fundraising in general and national comparison in particular, before developing hypotheses predicting different characteristics of entrepreneurial networking activities in China and Singapore. We then introduce the research methods in section 3. Section 4 presents the research findings from the statistical results and discusses the salient issues arising from the statistical analysis using additional qualitative interview data collected in the study. Finally, in section 5 we highlight the theoretical contributions and empirical implications of this study, acknowledge its limitations and identify future research directions.

## 2. Conceptual framework

### 2.1 *Entrepreneurial network utilisation in fundraising*

To pursue business opportunities, entrepreneurs need to acquire various critical resources, particularly funding, at the very early stage of their start-ups. However, prospective investors in risk-capital markets usually hesitate to commit long-term financial capital because of the high uncertainty stemming from the liability of the 'newness' and 'smallness' of new ventures (Stinchcombe 1965, Baum 1996). This is further compounded by information asymmetry problem in high-tech start-ups – because the investors most often know less about the new technologies or products than the entrepreneurs do, they are concerned about the potential opportunistic behaviours taken by the entrepreneurs (Venkataraman 1997). This market failure problem caused by high uncertainty and information asymmetry results in reduced odds of fundraising in the venture-capital market as well as informal risk-capital market (Mason and Stark 2004).<sup>1</sup>

Facing difficulties in raising external finance, entrepreneurs very often resort to various financial bootstrapping methods, for example buying used equipment or borrowing equipment from other businesses, seeking out best conditions possible with suppliers, withholding the manager's salary, or using routines for speeding up invoicing (Harrison and Mason 1997, Winborg and Landstrom 1997). Winborg and Landstrom (2000) grouped the various financial bootstrapping methods into an internal, a social and a quasi-market mode of resource acquisition. They questioned the conventional market-oriented fundraising mindsets in practice and suggested that, in many situations, resources needed in new ventures can be secured using social-oriented resource acquisition strategies.

Drawing on the same social embeddedness theoretical framework (Granovetter 1985), in the past 20 years many entrepreneurship scholars have noted that social network ties can be used by entrepreneurs to overcome market failure and facilitate fundraising from external investors (see Shane and Cable 2002, Shane and Stuart 2002, Batjargal and Liu 2004). Their research has shown that, like human capital (work and educational experience), social capital extracted from entrepreneurs' network ties are resource endowment at the start of the resource acquisition process (Carter *et al.* 2003). By leveraging social capital, entrepreneurs are not only able to advance their start-up process, including acquiring financial capital but the benefits of using social capital have also been found to be stronger and more consistent than those of human capital (Davidsson and Honig 2003). In practice, prior studies have reported that people with whom entrepreneurs have strong prior social ties, such as family members, friends, previous colleagues and business associates, are more likely to either fund the new venture themselves or recommend prospective investors they know to the entrepreneurs, because they trust the capabilities and integrity of the entrepreneurs (Bruno and Tyebjee 1985, Shane and Cable 2002, Shane and Stuart 2002, Witt 2004). If they are renowned experts in the technology/business area of the new venture, their recommendation will be interpreted as an endorsement of the venture and thus increase the odds of funding (Stuart *et al.* 1999).

Despite the benefits of using social networks in fundraising, in practice entrepreneurs do not always rely on extant ties (Schulze *et al.* 2003). Quite often they turn to the use of market methods, that is soliciting strangers as prospective investors, in risk-capital markets. However, what are the factors that influence the

entrepreneurs choice of social network vs. market methods? We found only a few prior studies have examined this question. Hite and Hesterly (2001) and Larson and Starr (1993) focused on the changing needs of new ventures over different growth stages, which require entrepreneurs to adjust their network utilisation strategy to respond to these changes. Ostgaard and Birley (1994) stressed the impacts of competitive strategies pursued by entrepreneurs on their network utilisation decision. More recently, Zhang *et al.* (2008) examined the influences of human capital of entrepreneurs. However, while these studies have enhanced our understanding of how an entrepreneur's network utilisation behaviour is affected by attributes endogenous to the venture or entrepreneur himself, they do not offer much insight on the contextual influences.

We believe that the usage of network ties instead of market methods in venture fundraising arises not only from market failures but also from institutional failures — that is, from dysfunctional institutions and ill-conceived rules and regulations that limit or impede the capacity of market forces to reach optimal solutions (Mercurio and Medema 1997). The emergence of a well-functioning, formal venture-capital market requires the establishment of not only the legal and regulatory framework governing financial transaction between new ventures and the formal investors but, also, a broader array of regulatory policies and enforcement institutions affecting the flow of funds from formal investors to new ventures. Some examples include rules governing whether pension funds are allowed to invest in venture capital funds, regulations governing investment and profit repatriation by foreign investors in venture capital funds (for instance, until recently foreign investors cannot establish a venture capital fund in China that raises investment from domestic sources), and the effective enforcement of intellectual property rights (IPR) protection laws which affect the risk of venture capital investment. Thus, we regard such regulatory policies that inhibit the flow of funds into new ventures, or such ineffective enforcement of laws (IPR protection laws, for example) as akin to 'institutional failures'. We believe that institutional failures stunt the growth of a formal venture-capital market, make an informal risk-capital market necessary and hence increase the entrepreneurs' proclivity to use network methods.

## 2.2 *National differences in network-based entrepreneurial behaviour*

One of the most effective ways to observe the institutional influences on economic activities is to compare multiple country samples (Drakopoulou Dodd and Para 2002). In the study of network-based entrepreneurship (Hoang and Antoncic 2003), a group of scholars have investigated the networking behaviour of entrepreneurs (the time they spend on building and maintaining networks) and the structure of their networks (the size and diversity of their networks) in a wide range of countries including USA, Italy, Sweden, Northern Ireland, Japan, Atlantic Canada and Greece (Aldrich *et al.* 1989, Birley *et al.* 1991, Aldrich and Sakano 1995, Staber and Aldrich 1995, Johannisson 1998, 2000, Drakopoulou Dodd and Para 2002). Other studies have focused on the effects of networks on the success of start-ups in countries like USA, Sweden, UK, Germany and Finland (Aldrich *et al.* 1987, Cooper *et al.* 1991, Aldrich and Reese 1993, Hansen 1995, Johannisson 1996, Ostgaard and Birley 1996, Bruderl and Preisendorfer 1998, Littunen 2000). Overall, these diverse studies reported remarkable benefits of using networks in start-up survival and growth. However, the networking behaviour

and network structures showed some heterogeneity across countries. For instance, US entrepreneurs seem to have larger personal networks than those in other countries although their ties are relatively weak; Japanese and Italian entrepreneurs spend the least time developing and maintaining their networks, which are mainly composed of strong ties (Aldrich and Sakano 1995, Staber and Aldrich 1995).

In explaining such findings of national differences, most literature attributed them to culture. Curran and colleagues argued that 'networks are best seen as primarily cultural phenomena, that is as sets of meanings, norms and expectations usually linked with behavioral correlates of various kinds' (Curran *et al.* 1993: 77). Based on their empirical study of comparing networking behaviour among eight countries, Drakopoulou Dodd and Patra (2002: 119) concluded that 'homogeneity suggest(s) a degree of generic universal entrepreneurial behavior, and heterogeneity highlight(s) the importance of cultural differences.' However, by making culture the 'residual' determinant, they may have ignored other possible dimensions of institutional differences among the countries.

Besides culture, the legal/regulatory framework of a country is a critical aspect of social context that shapes networking behaviour and its influence on economic actions. In her research on the evolution of the US trust system in the nineteenth century, Zucker (1986) argued that the development of the legal/regulatory framework and the independent credit administration and controlling systems, such as large audit firms, changed most of the economic exchanges in the USA from being based on personal trust to being based on institutional trust, which extended the scope and level of the economic exchanges in the society. Therefore, national legal/regulatory framework should be taken into account when examining individual networking behaviour.

Another perspective that was largely ignored in previous research is the nature of the resources being exchanged in the market place, such as availability, transaction cost and mobility. A good example on how the nature of the resources influences network utilisation is the study by Bian and Ang (1997). Comparing the network utilisation behaviour and its impact on job mobility in Singapore and Tianjin, China, they found that network ties were used actively by job seekers or prospective employers for entirely different reasons – in Tianjin, job seekers pursued networks to leave current jobs, because job mobility in China was limited due to government control; whereas in Singapore, networks were used popularly by cautious employers, who sought people knowing the applicants to check their potential company loyalty because employee turnover was very high in Singaporean companies. This case indicates that the mobility and transaction cost of human resources in the market place determine the contents transferred through network ties (help in leaving current jobs vs. transferring information of the applicants' loyalty) and the benefits vs. costs of using networks, which eventually influence individual's network utilisation propensity. In view of this, in our study we incorporate the availability of venture capital in the market and the distinction between two types of contents transferred through networks (social obligation vs. information transfer) in examining the different types of network relationships used in venture fundraising.

The comparative studies aforementioned could also benefit from including additional countries that add to the diversity of institutional contexts. Except for Japan, the countries that the earlier studies investigated have a fairly high degree of similarity in cultural, regulatory and market conditions – they are all mature economies, with dominant Christian majorities, high levels of education, developed Western democracies, to name but a few. Therefore, it is hard to detect substantial

differences of networking behaviours among the entrepreneurs in these countries (Drakopoulou Dodd and Para 2002). Hence, a comparison of countries with more distinctive social and economic contexts could throw into sharper relief the differences.

In this study, we compare venture fundraising behaviour in Singapore and Beijing, China. Despite sharing an obvious Chinese cultural linkage (80% of the population in Singapore are of Chinese descent), the institutional dissimilarity between the two economies is distinctive. First, while Chinese culture stresses social networks as the dominant force in economic exchanges (Yang 1994), Singaporean culture is characterised by the duality of Chinese and Western culture, which encourages fair and open market competition (Garrett *et al.* 2006). Second, the development of the legal/regulatory framework is less mature in China (Zhao and Adam 1995), where personal connections become particularly important in the absence of stable legal/regulatory protection (Zucker 1986). Finally, the development of the venture-capital market in the two economies is at distinctively different stages, resulting in significant differences in the availability of risk capital (Wang and Sim 2001, Batjargal and Liu 2004, Kumar *et al.* 2004). In sum, while Singapore has more similar institutional conditions to those of the western economies, China's context remains distinctively different from western systems, which makes the comparison an excellent research setting (Tsui *et al.* 2004).

### 2.3 *Hypotheses development*

#### 2.3.1 *The prevalence of network ties used in venture fundraising*

Summarising from the above literature review, we expect that differences in certain features of culture, legal/regulatory framework and venture-capital market in China and Singapore may contribute to differences in the extent to which Chinese or Singaporeans use their network ties in venture fundraising.

First, the literature suggests that Chinese culture with an emphasis on social obligation would lead to more networks used in China than in Singapore. Chinese culture has long been known for emphasising social relationships as a dominant form in economic and social organisation (Yang 1994). Fei (1947) observed that Chinese society is organised by concentric *guanxi* circles, extending from the family (the core), to relatives, friends and so on. Literally, *guanxi* means social connection and is a synonym for special favours and obligations (Yang 1994). Western universalism and individualism can be traced to the Protestant idea of equality before God and the ideas of natural rights and legal rights (Hamilton 1994). In contrast, the core of Confucianism is differentiated attitudes toward parents, children, siblings, kinsmen and friends, and so on (Peng 2004). Chinese culture respects a noble man who sacrifices self-interest to honour his obligations to his social ties (*jiang yiqi*). Hence, a Chinese tends to earn social respect (*zheng mianzi*) by fulfilling such social obligation. Empirical work has found *guanxi* helps in various social and economic activities, such as facilitating job mobility (Bian 1997), speeding new venture growth (Zhao and Adam 1995), and enhancing firm performance (Peng and Luo 2000). We expect the same would apply in the context of venture fundraising.

In contrast, although nearly 80% of the population in Singapore are of Chinese descent, Singaporean society has been substantially influenced by Western culture due to approximately 150 years of colonisation by the British before its independence in 1965. Singaporean society is characterised by an inherent cultural diversity.

The immigrants of the past have given the place a mixture of Malay, Chinese, Indian and European influences, all of which have intermingled. Therefore, Singaporean culture is characterised by the duality of individualism based on western culture and collectivism grounded on the Confucian ideals (Garrett *et al.* 2006). Hence, we expect that the Chinese have more intention to use network ties than Singaporeans do.

Second, the literature suggests that the relatively immature legal/regulatory framework in China would lead to greater network utilisation in China than in Singapore. As aforementioned, when uncertainty and information asymmetry problems become serious in fundraising process, potential investors could seek to reduce the potential risks by relying on legal protection, such as formal contracts, to deal with contingencies like bankruptcy and the opportunistic behaviour of entrepreneurs (Kaplan and Stromberg 2000). In addition, the investors could rely on the independent credit administration or controlling systems, such as audit firms, to monitor the entrepreneurs (Zucker 1986). However, in countries where the legal system is underdeveloped, investors have high proclivity to trust the entrepreneurs they know. One key reason is that investors, approached via social networks, have the power to sanction entrepreneurs by disseminating negative information about them through the networks, in case the entrepreneurs conduct malfeasant behaviour (Granovetter 1985). Since reputation takes time to build but can be destroyed quickly, networks can create strong disincentives for opportunistic behaviour (Gulati *et al.* 2000). Overall, this higher preference by investors in China to rely on trust to screen investment deals would therefore lead to a higher propensity to use network ties.

Finally, in terms of the development of financial market, the costs and availability of financial capital through formal market channels influence entrepreneurs propensity to use social networks when approaching potential investors. A resource that is already available through an efficient market does not justify the use of network ties, given that networks are costly to build and maintain (Lin 1999). Compared with Singapore, the venture capital market in China is still in its early stage of development, and thus the main capital channels for start-ups are still constrained within informal personal relationships. Historically, the Venture Capital (VC) industry started much earlier in Singapore and had become relatively advanced by the early 2000s (Wang and Sim 2001). The first VC fund was set up with S\$48m (about US\$30m) in 1983. By the end of 2001, the VC fund has reached S\$13.7b (about US\$8.5b) operated by 115 VC firms (EDB 2002). In China, although the first domestic VC firm was set up in 1986, the VC industry was only intensively developed after 1998 when the government adopted a number of policy schemes to promote private equity investments (Batjargal and Liu 2004). By mid 2002, 325 VC firms registered in China (Batjargal and Liu 2004). However, in July 2001, only 180 were active in investing in new ventures with funds of about RMB¥20b (US\$2.5b). Moreover, many of the VC funds were more like loans in nature since the new ventures often need to pay high interests, and most of them were government controlled. Hence, VC funds are very expensive and inaccessible for most high-tech new ventures.<sup>2</sup> In addition, corporate venture funds are also well-developed in Singapore (such as, Intel Investment) to fund high-tech projects that have strategic fit (EDB 2002). Corporate venture investing seems to be a very new concept in China as of the late 1990s, when the majority of our surveyed firms were founded. The lack of funds from the *formal investors* (VCs, corporate investors, banks and other institutional investors) in the market pushes the high-tech entrepreneurs in China towards *informal investors*, such as angel investors, families, friends or former business associates.

Since financial capital is more available in the market in Singapore than in China, the Singaporean entrepreneurs incur a lower transaction cost than their Chinese counterparts if they seek funds from formal investors (Williamson 1979). Hence, they are more likely to turn to formal investors. Since all informal investors, except angel investors, by definition are individuals that have either direct or indirect ties of the entrepreneurs, and angel investors are very likely to develop personal relations before finalising investment decision (Mason and Stark 2004), we expect more network ties to be used in China than in Singapore.

Incorporating the three arguments above, we have the first two hypotheses:

*Hypothesis 1: Chinese entrepreneurs have a higher propensity to use network ties to approach investors for fundraising than their Singaporean counterparts.*

*Hypothesis 2: Chinese entrepreneurs have a higher propensity to approach informal investors for fundraising than their Singaporean counterparts.*

### 2.3.2 Profile of network ties involved in venture fundraising

The impact of institutional environment on venture fundraising includes not only the entrepreneurs choice of network vs. market methods but, also, the types of network ties involved. In this study, we categorise network ties into two types: personal ties and business ties. *Personal ties* are based on non-business relationships, such as families or relatives, personal friends, neighbourhood, classmates in university and social club members; *business ties* are grounded on work-related functions initially, such as clients, suppliers, colleagues and business associates (Dubini and Aldrich 1991).<sup>3</sup>

We expect that Singaporean entrepreneurs would tend to solicit investment through their business ties, while the Chinese would prefer to use personal ties. This prediction is based on differences in the entrepreneurs expectation of the value of *guanxi* networks in fundraising and their perceptions of the business culture in the two countries. Two mechanisms were suggested to explain why networks facilitate venture fundraising. The first, '*social obligation*', is developed from Granovetter's (1985) theory of 'social embeddedness'. In contrast to the arm's length market relations that are guided by short-term, selfish and profit-maximizing motivation, embedded network ties interject expectation of trust and reciprocity into the economic exchange; hence, investors may commit financial capital due to social obligation (Uzzi and Gillespie 1999). The second mechanism, '*information transfer*' via network ties, is more economic-based. Networks enable potential investors to gather superior information on entrepreneurs' capabilities, as well as on the new ventures technology and market potential (Shane and Cable 2002). Moreover, recommendation from prestigious referrers becomes a signal to endorse the worth of new ventures, thus influencing investors' decision favourably (Stuart *et al.* 1999).

Personal ties convey more social obligations between the two parties, whereas business ties are more helpful in transferring private information about the competencies of the technologies and the entrepreneurs to the prospective investors (Dubini and Aldrich 1991). We therefore expect that Chinese entrepreneurs would have greater propensity to use personal ties, since such affection-based ties are more accessible and helpful. In contrast, we expect the Singaporean entrepreneurs, despite being ethnic Chinese, to rely more on using business ties in transferring business information to prospective investors (Shane and Cable 2002), given the greater influence of Western culture and stronger emphasis on economic calculations and



rationality for business decision-making in Singapore (Wong 2006). Therefore, we have the following hypothesis.

*Hypothesis 3: Chinese entrepreneurs have a higher propensity to use personal ties than business ties in venture fundraising compared to Singaporean entrepreneurs.*

### **3. Methods**

#### *3.1 Populations*

We collected data through on-site interviews and a questionnaire survey of high-tech start-ups in Singapore and Beijing, China. The high-tech sectors include IT hardware, software, telecommunications, biotechnology and high-tech manufacturing. The start-ups were less than eight years old as of 2002 when data were collected, so that the entrepreneurs could recall the initial resource acquisition processes more accurately (Zahra 1996).

In Singapore, we identified a total population of 460 independent high-tech ventures from multiple sources, including a listing of all spin-offs from the local universities, a listing of all tenant firms in all three science parks, a listing of start-ups provided by the Infocomm Development Authority (IDA) of Singapore, and a listing of biotech firms provided by the Economic Development Board (EDB) of Singapore. In Beijing, most early-stage high-tech ventures operate in science parks and incubators, and we draw our sample of ventures from these locations (BIA 2001, 2002) by approaching the relevant government incubator management authority involved. This yielded a total population of 523 firms from 12 incubator centres and science parks.

#### *3.2 Survey method*

We collected data in two stages: a pilot study in Singapore followed by a large-scale sample survey in Singapore and Beijing. In the pilot study, we identified 16 firms based on geographic convenience and interviewed the principal entrepreneurs, defined as the founders who hold the title of CEO or Managing Director. The pilot study helped us develop a structured questionnaire to be used in the second stage. More importantly, it identifies the major market methods used in venture fundraising. In the network-based entrepreneurship literature (Hoang and Antoncic 2003), most studies only concentrated on the two types of network methods, that is direct and indirect ties; and, implicitly, they assumed that market methods are homogenous 'arm-length relations', as opposed to network methods. However, we suspect that this is inaccurate, especially in a social context where public policies intervene to promote entrepreneurial activities. Thus, it is an important undertaking to identify various types of market methods. Without full understanding of the different market methods, our knowledge about network-based venture fundraising will be incomplete.

In the second stage, a large-scale survey involving onsite interviews and administration of structured questionnaires was carried out with the principal entrepreneurs of 128 start-ups in Singapore (a 30% response rate) and 250 in Beijing (a 48% response rate). In both cases, we found no significant differences between

respondents and non-respondents in terms of firm age, number of employees and industrial distribution, or between early and late respondents in terms of the key variables used in our hypothesis testing (Armstrong and Overton 1977).

The finalised questionnaire had two sections. The first section asked respondents to identify the *earliest* two cases of prospective investors whom the founding team members, including the respondent entrepreneurs, approached. The cases could be successful ones, where the investors eventually made investment commitment, or unsuccessful ones. For each case, respondents identified the types of investors (family or relatives, personal friends, former colleagues, business associates, angels, government agencies, venture capitalists (VCs), corporate investors, banks or other financial institutes, and others). They were then asked to recall the methods by which they approached the investors – whether through social networks (direct and indirect ties) or market methods (according to the finding from the pilot study, these include organisational referral, attending public events and cold calls). If ties were used, the respondents were asked to assess the dyadic or triadic relationships among the founding team members, investors and referrers (families or relatives, personal friends, neighbourhood, classmates in university, social club members, former colleagues, former business associates – suppliers, clients, or partners – and others), if any.

In the second section, the respondents provided information on their educational and employment backgrounds, and other relevant characteristics of their entrepreneurial experience. They were also asked to assess the competitive environment of their ventures.

After completing the structured questionnaire survey, the respondents were asked to respond to a number of open-ended questions pertaining to their reasons for using network vs. market methods in acquiring financial resources. The interviews lasted one hour on average, although the actual time ranged from 45 minutes to 2.5 hours. The interviews were tape-recorded and transcribed in Singapore; but were recorded on paper directly by the interviewers in Beijing.

As in many questionnaire studies, the self-reporting method may suffer from retrospective recall bias (Golden 1992). Nonetheless, Miller *et al.* (1997) found that retrospective reporting is a viable research method if the measures are adequately reliable and valid. Following their suggestions, we maximised the validity of our data by: (1) choosing our sample to cover only firms younger than 8 years, a conventional cutoff point of being a new venture in the literature (McDougall 1989, Zahra 1996), to ensure that the entrepreneurs could accurately recall their initial resource acquisition experience; and (2) encouraging the entrepreneurs to say that they did not remember, if in fact that was the case.

In China, it is difficult to find businessman willing to talk openly about their network utilisation. In particular, in recent years, using personal ties for venture fundraising from government agency or banks may be considered improper behaviour. To encourage candid response, we first explained the significance of the project when contacting them for the first time, and promised them that the data would be only used for academic research purpose by providing confidentiality letters. We also only took notes on paper instead of using a tape-recorder. In addition, only the surname of the prospective investors and relevant people were requested, a circumstance that provides some modest confidence in measure reliability (Xin and Pearce 1996).

Multiple types of data were analysed. Descriptive statistics on the questionnaire survey data revealed profiles of the respondent firms' founding teams and prospective

investors, and the prevalence of entrepreneurs using various network vs. market methods. A  $\chi^2$ -test was conducted to compare the results between Singapore and Beijing. Content analysis of the interviews was applied when interpreting the results.

## 4. Findings and discussion

### 4.1 Profiles of the samples and the data

The profiles of our samples in the two cities are similar in many aspects. In terms of distribution by industry, 80% of firms in Singapore are in IT (hardware and software) or the telecom industry, while the proportion is 65% in Beijing. The average employee number is 37 in Singapore and 40 in Beijing. In both locations the average number of founders is approximately three, and the average age of the founders when they started the new firms is nearly 35 years old. However, the firms in Beijing are distinctly younger, with an average age of 2.2 years in 2002 when we collected data for this study, versus an average age of 5.4 years in Singapore. The slightly higher average employee size in Beijing, despite their younger age, probably reflects the fact that labour cost is much lower in China vs. Singapore.

Among the 128 respondents in Singapore, 112 reported one or more cases of approaches to prospective investors, resulting in a total of 177 unique cases. Among the 250 respondents in Beijing, 124 reported one or more cases of approaches to investors, resulting in a total of 152 unique cases. The data reveal that the rate of approaching investors is lower in Beijing ( $49.6\% = 124/250$ ) than in Singapore ( $87.5\% = 112/128$ ). This is most likely due to the fact that the high-tech ventures in our Beijing sample are on average much younger and, hence, more of the entrepreneurs surveyed there may be still at the early stage of starting their new business with their own savings first, and had not reached the stage of actively seeking external investors yet.

### 4.2 Types of market methods used in venture fundraising

The pilot study identified three types of market methods commonly used: organisational referral, attending public events and making cold calls.

*Organisational referral* happens if the high-tech start-ups are tenants of an incubator or a Science Park, or a spin-off from a university or research institute. The administration of the affiliated organisation (incubator or university) quite often plays a referrer's role by recommending a prospective investor to a new venture (Allen and McKulskey 1990). This method is similar to using an indirect tie, in that the private information about the new venture, which is otherwise unavailable in the market, is transferred through the administration to the investors. Moreover, the reputation of the affiliated organisation may endorse the quality of the new venture. However, dissimilar to an indirect tie, very rarely is personal influence involved in this triangle of relationships. In particular, the administration is unlikely to have strong relationships with the investor. Therefore, the ties are very weak, if any, between the entrepreneur and the administration referrer, and between the referrer and the investor. In contrast, in the cases of indirect ties, the referrer generally has known both sides prior to her/his referral and their ties tend to be much stronger.

*Attending public events* have become more popular in recent years. All kinds of shows, exhibitions and seminars organised by industrial organisations, government agents, universities or research institutes provide a large number of opportunities for entrepreneurs and prospective investors to meet with each other, share information and explore collaboration.

The third method, *making cold calls* by telephone or in-door visit, was still widely used in the market place.

From organisational referral to making cold calls, the three types of market methods can be conceived as falling along a continuum where the linkages between the entrepreneurs and the prospective investors move towards a more pure market relationship. Along the continuum, less private information about the new ventures and less reputation influences, from the associated organisations, are transferred to the prospective investors (Burt 1992).

#### 4.3 *The prevalence of network ties involved in venture fundraising*

To test whether network ties were used more in China than in Singapore, as stated in Hypothesis 1, we constructed a cross-tabulation of 'investor type' with 'the method used in approaching the investor' (see table 1). Overall, network ties (direct and indirect ties) were involved in 103 (= 71 + 32) of the cases or about 58% in Singapore, while the corresponding numbers in Beijing were 128 (= 15 + 113) or 84%.  $\chi^2$ -test testifies that the difference is significant ( $\chi^2 = 25.77, p < 0.000$ ). In addition, in Beijing direct ties (74%) played a much more prominent role than indirect ties (only 10%) and market methods (16%) combined. In contrast, the latter combination was found to be relatively more popular (60%) than direct ties (40%) in Singapore. Our findings thus indicate that in China, direct ties were still the prominent means through which entrepreneurs sought early financing. Overall, H1 is supported.

In Hypothesis 2, we predicted that informal investors would be approached more frequently in China than in Singapore. table 2 shows the frequency distribution of the different types of investors identified by the respondent entrepreneurs in both cities. While formal investors were more prevalent in Singapore (66%), informal investors were more frequent in Beijing (69%). Our  $\chi^2$ -test testified that the difference of the distribution of informal vs. formal investors in the two locations is significant ( $\chi^2 = 28.65, p < 0.000$ ). Angel investors, a type of informal investors that started to attract the attentions of venture capital study (Hindle and Lee 2002, Mansson and Landstrom 2006), had similar incidence in both cities (12–15%). Overall, H2 is supported.

Our interviews with the entrepreneurs illustrate the impacts of the three aspects of institutional environments on entrepreneurs' propensity of using network ties in the two countries. First, the interviews suggest that network ties, especially strong and direct ties, were necessary conditions for the entrepreneurs in Beijing to *access* investors, who were otherwise almost unavailable to new ventures. For instance, one entrepreneur noted:

He (my ex-boss) considers me more of a friend now, (because) there was 10 years of relationship between us... I worked for him and we kept in touch for a long time. There was certainly some confidence, and some trust that were built up over years. When I started this company, I first went to the bank for loan. But the bank didn't lend me, because my company had no track record. Then I went to see some so-called VCs,

**Table 1. The methods used in approaching different types of investors (frequency count).**

Type of investor	Singapore						Beijing					
	Market methods			Network methods			Market methods			Network methods		
	Cold call	Public events	Org. referral	Indirect tie	Direct tie	Total	Cold call	Public events	Org. referral	Indirect tie	Direct tie	Total
Family or relative	0	0	0	1	8	9	0	0	0	0	0	20
Personal friend	0	0	0	0	12	12	0	0	0	1	1	33
Former colleague	0	0	0	0	4	4	0	0	0	1	1	11
Business associate	0	0	0	0	7	7	0	0	0	3	3	22
Angel	1	4	2	10	11	28	0	2	2	1	1	14
Government agency	3	0	1	1	3	8	1	1	1	0	0	2
Venture capitalist	19	11	18	15	5	68	2	1	3	4	10	20
Corporate investor	0	2	3	2	16	23	5	1	3	2	2	13
Bank or other institute	5	2	0	3	4	14	1	0	0	1	0	2
Others	1	1	1	0	1	4	1	1	1	2	6	10
Total	29	20	25	32	71	177	10	6	8	15	113	152
Percentage	16.4	11.3	14.1	18.1	40.1	100	6.6	3.9	5.3	9.9	74.3	100
		74		103		24				128		
		41.8		58.2		15.8				84.2		

Notes: Comparing the distribution of network methods vs. market methods in the two locations:  $N = 329$ ,  $\chi^2 = 25.77$ ,  $df = 1$ ,  $p < 0.000$ .

**Table 2. Types of prospective investors identified by the entrepreneurs.**

		<i>Singapore</i>		<i>Beijing</i>	
		<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Informal investor	Family or relative	9	5.1	20	13.2
	Personal friend	12	6.8	33	21.7
	Former colleague	4	2.3	11	7.2
	Business associate	7	4.0	22	14.5
	Angel	28	15.8	19	12.5
	Total	60	34	105	69
Formal investor	Government agency	8	4.5	2	1.3
	Venture capitalist	68	38.4	20	13.2
	Corporate investor	23	13.0	13	8.6
	Bank or other institute	14	7.9	2	1.3
	Others	4	2.3	10	6.6
	Total	117	66	47	31
Total		177	100	152	100.0

*Notes:* Comparing the distribution of informal vs. formal investors in the two locations:  $N=329$ ,  $\chi^2=28.65$ ,  $df=1$ ,  $p<0.000$ .

but I never got any answers after leaving my proposals on the secretary's desk. I didn't even get chances to visit the directors. Finally, I turned to my ex-boss. I approached him with the idea. He believed in the relationship that we have forged over the years; in addition, the idea is in some way related to his business. . . . There is certainly a social part of it.

The above quotation suggests that prospective investors in China have little trust for the people they do not know, and they rarely respond to market approaches. Our interviews also suggest that the underdeveloped legal/regulatory framework in China would lead to a more serious situation such that the entrepreneurs do not trust the investors without prior relationships. When the uncertainty is high due to the lack of legal protection, people have to turn to those they have known to reduce potential risks. For instance, one entrepreneur, who invented an electronic device that corrects the short-sight of young people, told us his unfortunate experience:

Our product was awarded the National Innovation Silver Medal. Our business plan was also ranked top in the Annual Start-up Competition organized by the Qinghua University in 2001. Some so-called VCs knocked at our door and offered their funding. Initially we did not have experience and told them many technological secrets. But very soon we found a very similar product in the market! We bought one and tried. It did not work well. But except for us, who can tell the difference between the fake product and ours if you don't buy both products? We want to sue the VC, but we don't have the time and money. Now we have to revise our product and announce a new product. Of course, we take this lesson and will never talk with strangers.

In contrast to the responses by entrepreneurs in Beijing, the Singaporean entrepreneurs show greater reluctance to use social networks, not because they do not have the necessary *guanxi* but because they have a different perception of the costs and benefits involved, given the more transparent institutional environment involved. The environment also forms a distinctive business culture in respect to people's attitude towards network utilisation. This is typified by the response of one entrepreneur on his concerns with raising funds from the people they know:

'*Guanxi*' is not very easy to use. You have to be very careful. I know a lot of my friends or their friends working in big banks. Of course, I can ask them to lend me some money.

Yes, I believe they may help. But they will fear. If they give me money and other people know it, they will say: 'you know, he pulls this off because of personal benefits', or something like that. I don't want to give them the trouble.

#### 4.4 Types of network ties involved in venture fundraising

Hypothesis 3 predicted that Chinese entrepreneurs use more personal ties, while Singaporean use more business ties. To test it, we first tabulated data from the cases involving direct ties only. Table 3 shows the types of relationships between the entrepreneurs and the prospective investors. The data show that in Singapore, the most common relationship types were former business associates (including suppliers, clients or business partners, professor-student and so forth) (49%) and personal friends (21%), while in Beijing, they were personal friends (35%) and former business associate (21%). Families or relatives were ranked lower in both places (in Singapore, 11%; in Beijing, 19%). In aggregate, in Singapore 62% direct ties are business ties, while in Beijing it is much lower at 39%.  $\chi^2$ -test shows that the percentage of business ties were significantly higher in Singapore ( $\chi^2 = 38.76, p < 0.000$ ).

Next, the relationships involved in the cases of indirect ties are examined. Table 4 shows two linkages respectively: ties of entrepreneur-referrer and ties of referrer-investor. By and large, in both locations and both linkages, business ties seemed more popular than personal ties (53% for the entrepreneur-referrer ties and 84% for the referrer-investor ties in Singapore; the corresponding figures are 73% and 73% respectively in Beijing). In particular, 'former business associate' was the most popular among referrer-investor ties, with 'former colleague' being the second most popular type in both locations and both linkages, except for entrepreneur-referrer ties in Singapore, where 'personal friend' was as popular as 'former business associate' (41%).  $\chi^2$ -test shows that the entrepreneurs in Singapore have higher propensity to use business ties of referrer-investor than those in Beijing, as predicted by Hypothesis 3 but the converse was found for the ties of entrepreneur-referrer. Since the sample

**Table 3. The types of relationship between entrepreneur and investor in direct tie cases.**

		<i>Singapore</i>		<i>Beijing</i>	
		<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
Personal tie	Family or relative	8	11.3	21	18.6
	Personal friend	15	21.1	39	34.5
	Neighborhood	0	0	4	3.5
	Classmate in university	4	5.6	2	1.8
	Social club member	0	0	3	2.7
	Total	27	38	69	61
Business tie	Former colleague	8	11.3	14	12.4
	Former business associate	35	49.3	24	21.3
	Others	1	1.4	6	5.3
	Total	44	62	44	39
Total		71	100.0	113	100.0

*Notes:* Comparing the distribution of personal ties vs. business ties in the two locations:  $N=184$ ,  $\chi^2 = 38.76$ ,  $df=1$ ,  $p < 0.000$ .

Table 4. The types of relationship between entrepreneur and referrer, between referrer and investor in indirect tie cases.

	Singapore						Beijing					
	Entrepreneur-referrer			Referrer-investor			Entrepreneur-referrer			Referrer-investor		
	Frequency	Percentage		Frequency	Percentage		Frequency	Percentage		Frequency	Percentage	
Personal ties												
Family or relative	2	6.3		0	0.0		1	6.7		1	6.7	6.7
Personal friend	13	40.6		2	6.3		2	13.3		1	6.7	6.7
Neighbourhood	0	0.0		1	3.1		1	6.7		0	0.0	0.0
Classmate in university	0	0.0		2	6.3		0	0.0		2	13.3	13.3
Total	15	46.9		5	15.7		4	26.7		4	26.7	26.7
Business ties												
Former colleague	3	9.4		3	9.4		4	26.7		3	20.0	20.0
Former business associate	13	40.6		20	62.5		5	33.3		6	40.0	40.0
Others	1	3.1		4	12.5		2	13.3		2	13.3	13.3
Total	17	53.1		27	84.4		11	73.3		11	73.3	73.3
Total	32	100.0		32	100.0		15	100.0		15	100.0	100.0

Notes: Comparing the distribution of personal ties vs. business ties in the two locations: (1) For ties of entrepreneur-referrer:  $N=47$ ,  $\chi^2=14.82$ ,  $df=1$ ,  $p<0.000$ . (2) For ties of referrer-investor:  $N=47$ ,  $\chi^2=17.91$ ,  $df=1$ ,  $p<0.000$ .



sizes of indirect ties in both cities were small ( $n = 32$  in Singapore,  $n = 15$  in Beijing), however, the above findings need to be interpreted with caution. Overall, H3 is supported in the case of direct ties, but only partially supported in the case of indirect ties.

Our interview showed that most Singaporean entrepreneurs recognised the fact that in Singapore business interests have to outweigh social obligation, because everyone has a responsibility to their organisations. The following statement by one entrepreneur in Singapore reflects a very popular perception:

Relationship maybe get you a hearing, they may just give you a chance to listen to your presentation. That is all. But if you don't have a good business model or a company can offer something to them that can make money, it won't work. Everybody needs real business. That is very simple.

Another entrepreneur articulated a similar argument but, from a cultural perspective. The statement highlighted the potential problems of using networks in business, in that a ruined business relationship may ruin friendship as well. Hence, the dual functions of network ties, social obligation and information transfer in economic decision, are intertwined and have to be managed carefully.

I like to be clear of any obligations on a personal level, social level. People who believe in my business are truly investing in it as a business person. They may be my friends, but I'll try not to have that complication, because, if I fail, I have more than just the business accountability to make to that person. If he was my friend too, he may say all sorts of things to others, like 'I trusted him, but he never did this and that; he never listened to me', or 'he disappointed me' or whatever. I like to keep things at the business level. So even if a person were to be my friend, I would like to make that very clear, that they are investing because they believe in the business, and not because they are my friends. I like to draw the line.

## 5. Implications and conclusion

We believe that our findings make three contributions to the literature on network-based entrepreneurship. First, this study suggests that other than the traditional notion of market failure, institutional failure is an important driver activating social ties utilisation. In this respect, our work has extended prior research on the benefits of mobilising social ties in venture fundraising (Shane and Cable 2002). While much of the prior research revolved around the general belief that social embeddedness would lead to better outcomes and hence entrepreneurs should always prefer the use of network ties, this study challenges this implicit assertion. Our findings suggest that, depending on the cultural, regulatory and market contexts in which a new venture operates, the propensity to use network versus market methods should vary and, furthermore, different types of network relationships may be emphasised. Our study thus highlights the contingent value of social networks and suggests the need to examine how institutional environment influences the intensity and nature of network-based entrepreneurial activities.

Second, while most prior studies of entrepreneurial fundraising have examined it from the investor's perspective, this study provided new insights from the entrepreneur's perspective. For instance, Shane and Cable (2002) used the investors report to observe their linkages with referrers in the cases of indirect ties. These studies seemed to assume that the intimacy between investors and referrers is sufficient in

facilitating new venture fundraising. Our study challenges this assumption by showing that, in most cases, it was the entrepreneurs who initiated the relationships with referrers and chose appropriate referrers from direct ties. Similarly, while Wong and Ho (2007) reported on the prior relationships between informal investors and their investees in Singapore, their analysis is from the perspectives of the informal investors.

Third, this study is the first attempt to explore the various types of market methods used in venture fundraising. Hence, it sheds light on the black box of the market side in the network-based entrepreneurship research (Hoang and Antoncic 2003). Moreover, this study provided new empirical evidence on the prevalence of various types of social networks and market methods used in venture fundraising. In particular, we investigated different types of network relationships used in both direct and indirect ties, while most prior studies have concentrated only on direct ties, due perhaps to the difficulty in obtaining data involving the identities of investors or referrers involved in the fundraising process (Xin and Pearce 1996).

The findings of this study carry important implications for public policy makers in emerging economies such as China. One obvious implication is that the government should hasten the development of a more efficient venture-capital market. Another implication is to accelerate the establishment of a more transparent financial audit and credit rating system that complies with international standards. There have been some good developments in these directions. For example, the Committee of Beijing Zhongguancun Science Park, known as China Silicon Valley, has initiated the credit service system among its 7,000 tenant firms since 2001. All kinds of business credit records about the firms were stored in a database managed by the administrative office, some of which were open to the public (Zhongguancun 2001). Through reducing the problem of information asymmetry, this system aimed to facilitate business exchanges between organisations that did not have existing relations at the individual level, and thus benefits entrepreneurs in term of extending their search scope and improving the accessibility of qualified investors. By promoting a business environment that encourages institution-based trust while reducing the extensive reliance on personal trust, the government could eventually increase the rate of high-tech venture formation in the region.

The major limitation of this study is that we were not able to isolate the separate effects of the three institutional environmental factors – culture, regulation and market. Future research should develop constructs for testing the independent effects of each of these institutional factors. Another limitation of this study is the potential lack of comparability of the samples of high-tech firms in the two locations. While the entire Beijing sample was drawn from high-tech incubators and science parks, some Singapore firms were not located in incubators or science parks. Although the sample selection was partly justified by the fact that most high-tech ventures in Beijing are located in incubators or science parks, the policies and actions of the affiliated incubator/science park management organisations may have a distorting effect on the methods entrepreneurs used in seeking funds. The younger age of the respondent firms in Beijing vs. Singapore may also be a source of a bias, if very young ventures have a different network utilisation pattern compared to older ventures. Hence, future research may need to have a larger survey sample to control for the influence of intermediaries and age of ventures.

In summary, this exploratory study has identified the need for more research on the institutional environmental factors that influence entrepreneurs' networks

utilisation in the process of new venture creation. It also suggests the usefulness of the cross-country comparative research method in studying the influence of institutional factors in entrepreneurship study.

### Notes

1. According to Hisrich *et al.* (2007: 374), risk-capital markets for new ventures include venture-capital market consisting of formal firms (such as, venture capitalists, banks and corporate investors), informal risk-capital market consisting of individuals (such as angels) and public-equity market consisting of publicly owned stocks of companies. Here, we focus on early-stage venture fundraising and thus public-equity market is excluded.
2. Data source (see <http://www.bvcc.com.cn>).
3. Business ties and personal ties are categorised here according to the original relationships between the entrepreneurs and their network ties before they initiate the investment exchange. We agree that individual exchange relationships as personal ties combine economic and social concerns (Johannisson 2000), such that the two strands are not exclusive after the exchange process starts.

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